

REPORT NO.  
109013 DST 1

PAGE NO. 1

TEST DATE:  
15-Jan-1988

# STAR™

A Schlumberger Transient Analysis Report  
A Production System Analysis (NODAL™)  
Of A Flopetrol Johnston Drillstem Test

FLOPETROL JOHNSTON

Schlumberger

Company: SANTA FE ENERGY

Well: NH 35 #1

### TEST IDENTIFICATION

Test Type ..... MFE OH J300 DST  
Test No. .... One  
Formation ..... Wolfcamp  
Test Interval (ft) ... 10120 to 10248  
Reference Depth ..... Kelly Bushing

### WELL LOCATION

Field ..... North Hume  
County ..... Lea  
State ..... New Mexico  
Sec/Twn/Rng ..... 35/ 15s/ 24e  
Elevation (ft) ..... n/a

### HOLE CONDITIONS

Total Depth (MD/TUD)(ft) . 10248  
Hole Size (in) ..... 7 7/8  
Casing/Liner I.D. (in) ... --  
Perf'd Interv./Nt Pay(ft). -- / 10  
Shot Density/Diameter(in). --

### MUD PROPERTIES

Mud Type ..... Gel  
Mud Weight (lb/gal) ..... 8.9  
Mud Resistivity (ohm.m) .. n/a  
Filtrate Resistiv.(ohm.m). --  
Filtrate Chlorides (ppm) . 1,200

### INITIAL TEST CONDITIONS

Initial Hydrostatic (psi). 4709  
Gas Cushion Type ..... None  
Surface Pressure (psi) ... --  
Liquid Cushion Type ..... None  
Cushion Length (ft) ..... --

### TEST STRING CONFIGURATION

Pipe Length (ft)/I.D.(in). n/a / 3.83  
Collar Length ft/I.D.(in). n/a / 2.25  
Packer Depths (ft) ..... 10114, 10120  
Bottomhole Choke Size(in). 15/16  
Gauge Depth (ft)/Type .... 10100 / J-300

### NET PIPE RECOVERY

| Volume       | Fluid Type | Properties           |
|--------------|------------|----------------------|
| 47.6 Bbls    | Oil        | 35 API at 60 F       |
| 23.8 Bbls    | Water      | Rw 0.09 at 70 F      |
|              |            | 79,000 PPM           |
| Recovery was | reversed   | out, the reported    |
| volumes were | estimated  | from "pump" strokes. |

### NET SAMPLE CHAMBER RECOVERY

| Volume      | Fluid Type | Properties |
|-------------|------------|------------|
| 5.22 SCF    | Gas        |            |
| 520 cc      | Oil        |            |
| 1100 cc     | Water      |            |
| Press. 1325 | GOR: 1596  | GLR: 512   |

### VALIDATION RESULTS

Model of Behavior ..... Heterogeneous  
Fluid Type Used ..... Oil and Water  
Reservoir Pressure (psi) . 3289 (ISI)  
Transmissivity (md.ft/cp) 271.16  
Permeability (md) ..... 12.47  
Skin Factor/Damage Ratio . -0.42 / 0.92  
Storativity Ratio .....  
Interporosity Flow Coeff..  
Distance to Anomaly (ft).  
Investigation Radius (ft). 122  
Potentiometric Surf. (ft).

### ROCK/FLUID/WELLBORE PROPERTIES

Oil Density (deg. API) ... 35  
Basic Solids (%) .....  
Gas Gravity ..... 0.65 (est)  
Water Cut (%) ..... 68 (sampler)  
Viscosity (cp) ..... 0.46  
Tot. Compress. (1/psi) ... 2.7 E-05  
Porosity (%) ..... 15 (est)  
Reservoir Temperature (F). 146  
Form.Vol.Factor (bbl/STB). 1.35

PRODUCTION RATE DURING TEST: 315 Bbls/day

### COMMENTS:

The results of the interpretation indicate that the well is in an apparent heterogeneous system with good effective permeability and with no wellbore damage at the time and conditions of the test. The designation of heterogeneous was based on the upward break on the final shutin Horner plot, this could be an indication of a boundary, a decrease in transmissivity away from the wellbore or natural fractures. The difference in the extrapolated pressures is probably due to insufficient final shutin time.

# WILLBROS DRILLING, INC.



## INCLINATION REPORT

OPERATOR: Santa Fe Energy Operating Partners, L.P.  
500 W. Illinois, Suite 500  
Midland, Texas 79701

LOCATION: N.H. 35 Federal No. 1  
Lea County, New Mexico  
Sec. 35, T-15-S, R-33-

1980/E 1510/8

| DEPTH<br>FEET | INCLINATION<br>DEGREES | DEPTH<br>FEET | INCLINATION<br>DEGREES | DEPTH<br>FEET | INCLINATION<br>DEGREES |
|---------------|------------------------|---------------|------------------------|---------------|------------------------|
| 237           | 1                      | 7,106         | 3/4                    |               |                        |
| 475           | 1                      | 7,633         | 1/2                    |               |                        |
| 625           | 1/4                    | 8,124         | 3/4                    |               |                        |
| 1,158         | 1/4                    | 8,381         | 1-1/4                  |               |                        |
| 1,662         | 1/4                    | 8,737         | 1-1/4                  |               |                        |
| 2,163         | 3/4                    | 9,235         | 3                      |               |                        |
| 2,691         | 1                      | 9,326         | 2-1/2                  |               |                        |
| 3,192         | 1/2                    | 9,482         | 3                      |               |                        |
| 3,695         | 3/4                    | 9,574         | 2-1/2                  |               |                        |
| 4,167         | 1/4                    | 9,698         | 2-1/2                  |               |                        |
| 4,550         | 3/4                    | 9,792         | 1-3/4                  |               |                        |
| 4,982         | 3/4                    | 10,376        | 1                      |               |                        |
| 5,487         | 1                      | 10,695        | 3/4                    |               |                        |
| 5,887         | 1                      | 11,150        | 1                      |               |                        |
| 6,123         | 1/2                    |               |                        |               |                        |
| 6,610         | 3/4                    |               |                        |               |                        |

COUNTY OF MIDLAND  
STATE OF TEXAS

The undersigned states that he has knowledge of the facts and matter herein set forth and that the same are true and correct.

  
L. E. Grimes, President

SUBSCRIBED AND SWORN TO BEFORE ME THIS 29<sup>th</sup> day of January 1980

  
Notary Public

My commission expires: August, 1989